EFCOG Best Practice #81

Best Practice Title: Elements of a Best-Practice Safety Equipment List

Facility: Multiple DOE Sites

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Brief Description of Best Practice: The Engineering Practices Working Group Configuration Management subgroup conducted a survey in 2007 of its members and obtained data on maintenance of Safety Equipment Lists (SELs) from 8 different companies/DOE sites. Based on this survey, the Working group then summarized the key elements, best practices and approaches that the sites used. These are summarized in this Best Practice.

Why the best practice was used: SELs are a key item that each of the member companies that have operating nuclear facilities must develop and maintain. The Engineering Practices Working Group identified this as an area that would benefit from sharing best practices used at the different sites. Having a correct, accessible SEL is a component needed to performing work within Controls, as it is the link between the safety basis and specific equipment requirements.

What are the benefits of the best practice: SELs, when developed and controlled in an appropriate manner, can provide a rapid, effective way for operating staff, particularly cognizant system engineers assigned to the Category II nuclear facility to better understand and manage key equipment.

What problems/issues were associated with the best practice: Sites were at different levels of maturity (e.g. new facilities, older facilities in cleanup mode) and had different systems. These must be accounted for when implementing this best practice.

How the success of the Best Practice was measured: The best practice elements selected were used at more than one site and had been successfully applied.

Description of process experience using the Best Practice:

Safety Equipment Lists (SELs) are used to document safety equipment components for safety class and safety significant hardware at the Department of Energy Category II nuclear facilities. These lists can be hard copy (reports) or databases. The DOE guidance that discusses SELs does not provide specific guidance such as level of detail, who should maintain the list, etc. The Configuration Management subgroup of the Engineering practices group conducted a survey of different site practices and used the resulting data to develop a white paper to define the recommended elements to develop and maintain SELs. This Best Practice summarizes that paper. The full paper can be obtained from the Configuration Management Subgroup documents page: http://efcog.org/wg/ep_cm/documents.htm.

Elements of a good Safety Equipment List:

- SELs, whether controlled by document or database, should be strictly controlled. Changes should be made by a limited number of qualified engineers who understand the controlling safety analysis (documented safety analysis), particularly the controlling accidents and how the safety class or safety significant

component will focus.

- Sites should have a procedure that defines how to develop, control and change the SEL.

- SELs are useful in supporting procurement actions, particularly in establishing quality level and critical attributes to be confirmed as part of procurement. To support this end, the SEL should break safety class and safety significant components into the smallest practical unit, to best align with the procurement activity. As an example, if a ventilation system is safety class/safety significant, the SEL should break it into meaningful (from a procurement, maintenance and testing aspect) lowest level elements. These would include fan, fan motor, duct work, filter, filter housing, fan belts, etc.

- Unique numbers (e.g. equipment identification numbers) would be beneficial for an SEL. This makes the tool more valuable for maintenance.

- Hard copy (documents) can provide a traceable record and make the process for delivering a listing to the customer (normally DOE field office). A controlled database has the added advantage of being quickly sorted, and linked. The most effective databases are controlled (development, changes and version controlled by limited number of trained staff) while at the same time, linked or part of a larger system that is used by multiple groups, particularly Cognizant system engineers, maintenance and operations staff. For example, Hanford Tank farms have built their SEL as part of their work control software with the added control on those fields to control who can add or change the safety designation.

- Several sites have successfully maintained both a hard copy (formal document) and the same information on a searchable web-accessed database. This can be done effectively if the procedure links the update of one to the other (e.g. assures both the document and database are maintained to the same level). With new information technology, it is possible to have the system set up such that updating the record in one master system can automatically update the document and web-accessed system.

- Whether in document or database, the SEL should provide summarized information regarding the safety function each component must meet.

- Normally the SEL would be a subset of the Maintenance Equipment List. Where to separate lists are maintained, there is always the risk of disconnects (inconsistencies) between the two).

- Safety equipment lists can and should cover hazards beyond nuclear, if those other hazards present a co-located worker or off site public hazard.